

13. (New) A device for measuring interaction of radiation with a material, comprising:

a primary radiation source;

a device for measuring luminous intensity of radiation that has interacted with the material, the device including a photomultiplier equipped with a main window for entrance of the radiation, an entrance photocathode disposed in a field of the window, and a calibration source configured to emit radiation of constant intensity oriented toward the photocathode;

means for turning off the radiation source or for blocking the radiation to be measured; and

means for activating the calibration source exclusively during periods when the radiation is turned off or blocked.

14. (New) A device according to claim 13, further comprising means for calculating a ratio of the measurement performed by the photomultiplier subjected to the radiation to be measured during a period when the radiation is not turned off or blocked to the measurement performed by the photomultiplier under same conditions during a period when the calibration source is activated.

15. (New) A device according to claim 13, wherein the calibration source includes an electroluminescent diode.

16. (New) A device according to claim 15, wherein a wavelength of a maximum emission intensity of the electroluminescent diode falls within a wavelength region of maximum sensitivity of the photomultiplier.

17. (New) A device according to claim 13, further comprising a scintillator element disposed across the main entrance window and configured to convert the radiation to be measured to radiation of a wavelength matched to sensitivity of the photomultiplier, the

calibration source emitting directly toward the photocathode without passing through the scintillator element.

18. (New) A device according to claim 13, further comprising means for disposing the material in a path of the radiation between the primary source and the measuring device.

19. (New) A device according to claim 18, wherein the primary radiation source includes an X-ray source.

20. (New) A device according to claim 19, wherein the X-ray source is pulsed to ensure that the primary radiation source is periodically turned off.

21. (New) A device according to claim 20, wherein the pulsed source includes an X-ray emission tube provided with a filament, an anode, a cathode, and means for applying a high alternating voltage between the anode and the cathode.

22. (New) A process for measuring luminous intensity of radiation by the device according to claim 13, wherein the radiation to be measured is measured, the radiation of the calibration source is measured, and a ratio of the measurement of the radiation to be measured to that of the radiation of the calibration source is calculated.

23. (New) A process for measuring the luminous intensity of radiation by the device according to claim 22, comprising:

while the calibration source is turned off or blocked, an intensity of the radiation to be measured is measured by the photomultiplier;

thereafter, while the radiation to be measured is turned off or blocked, the intensity of the radiation of the calibration source is measured by the photomultiplier maintained under same adjustment conditions; and

a final value of the intensity of the radiation is deduced by calculating a ratio of the measurement of the radiation to be measured to that of the radiation of the calibration source.